

Docket No. 240129US2RD



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Hideaki NAKAKITA et al.

SERIAL NO: 10/615,768

GAU: 2681

FILED: July 10, 2003

EXAMINER:

FOR: WIRELESS COMMUNICATION SCHEME WITH COMMUNICATION QUALITY GUARANTEE AND  
COPYRIGHT PROTECTION

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Customer Number

22850

Tel. (703) 413-3000

Fax. (703) 413-2220

(OSMMN 05/03)

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Eckhard H. Kuesters

Registration No. 28,870

Joseph A. Scafetta, Jr.  
Registration No. 26, 803



### LIST OF RELATED CASES

<u>Docket Number</u>	<u>Serial or Patent Number</u>	<u>Filing or Issue Date</u>	<u>Inventor/ Applicant</u>
240129US2RD*	10/615,768	07/10/03	NAKAKITA et al.
246007US2RD	10/722,515	11/28/03	SAITO et al.

\*Present Application; listed for information  
EHK/sb

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WHAT IS CLAIMED IS:

1. A communication relay device connected to a home network, for relaying information between an outside communication device connected to an outside network and a home communication device connected to the home network, comprising:
  - a first copyright protection unit configured to carry out a first authentication and key exchange processing for purpose of copyright protection between the communication relay device and the home communication device on the home network;
  - a second copyright protection unit configured to carry out a second authentication and key exchange processing for purpose of copyright protection between the communication relay device and the outside communication device on the outside network, based on a scheme different from the first authentication and key exchange processing;
- 20 an identification information memory unit which stores an identification information of the outside communication device; and
- 25 a bridge processing unit configured to receive an access request for the home network from the outside communication device, and carry out transmission/reception of information between the home

network and the outside network only when the outside communication device which made the access request is stored in the identification information memory unit and then only when both the first authentication and  
5 key exchange processing by the first copyright protection unit and the second authentication and key exchange processing by the second copyright protection unit succeed.

10 2. The communication relay device of claim 1, further comprising a registration control unit configured to limit a number of outside communications devices that can be stored in the identification information memory unit to a prescribed number,

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3. The communication relay device of claim 1, further comprising a registration control unit configured to prohibit a deletion of a stored identification information in the identification information memory  
20 unit.

4. The communication relay device of claim 1, wherein the identification information memory unit stores in advance at least one of a device ID for identifying the  
25 outside communication device and a physical address of a communication interface for purpose of copyright

protection, before transmitting contents to the outside communication device.

5. The communication relay device of claim 1, wherein  
5 the identification information memory unit has a mode  
for storing a result of the second authentication and  
key exchange processing by the second copyright  
protection unit, in a state where an access to the home  
network is permitted to the outside communication  
10 device.

6. The communication relay device of claim 5, further comprising:

a user information memory unit which stores a user  
15 authentication information for the outside  
communication device; and

an authentication judgement unit configured to  
judge whether the user authentication information of  
the outside communication device which made the access  
20 request for the home network is stored in the user  
information memory unit or not;

wherein the bridge processing unit judges whether  
or not to permit an access between the home network and  
the outside network, according to a judgement result of  
25 the authentication judgement unit.

7. The communication relay device of claim 5, further comprising:

a user information memory unit which stores a user authentication information for the outside

5 communication device; and

an authentication judgement unit configured to judge whether the user authentication information of the outside communication device which made the access request for the home network is stored in the user  
10 information memory unit or not;

wherein the identification information memory unit stores at least one of a device ID for identifying the outside communication device and a physical address of a communication interface for purpose of copyright  
15 protection, according to a judgement result of the authentication judgement unit.

8. The communication relay device of claim 1, wherein the identification information memory unit has a mode  
20 for storing a result of the first authentication and key exchange processing by the first copyright protection unit.

9. The communication relay device of claim 8, further  
25 comprising:

a user information memory unit which stores a user

authentication information for the outside communication device; and

an authentication judgement unit configured to judge whether the user authentication information of 5 the outside communication device which made the access request for the home network is stored in the user information memory unit or not;

wherein the bridge processing unit judges whether or not to permit an access between the home network and 10 the outside network, according to a judgement result of the authentication judgement unit.

10. The communication relay device of claim 8, further comprising:

15 a user information memory unit which stores a user authentication information for the outside communication device; and

an authentication judgement unit configured to judge whether the user authentication information of 20 the outside communication device which made the access request for the home network is stored in the user information memory unit or not;

wherein the identification information memory unit stores at least one of a device ID for identifying the 25 outside communication device and a physical address of a communication interface for purpose of copyright

protection, according to a judgement result of the authentication judgement unit.

11. The communication relay device of claim 1, further  
5 comprising:

a Web page production unit configured to produce a Web page describing information for controlling or monitoring the home communication device; and

10 the Web page produced by the Web page production unit to the outside network;

wherein the outside communication device controls or monitors the home communication device by using the Web page received through the outside network.

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12. The communication relay device of claim 1, wherein the first copyright protection unit realizes copyright protection by adopting at least one of a provision for limiting a TTL (Time To Live) field of a packet  
20 transmitted/received between the home communication device and the outside communication device to a specific value, a provision for using a link local address in an Internet protocol, and a provision for using a Ethernet frame as a transmission packet.

25

13. The communication relay device of claim 1, further

comprising a routing control unit configured to notify  
a specific port number to a connection device for  
carrying out a connection control for the home network  
and the outside network, and make a setting such that a  
5 packet transmitted to the specific port number will be  
transmitted to the communication relay device.

14. The communication relay device of claim 1, further  
comprising a routing control unit configured to notify  
10 a global IP address of the communication relay device  
to a connection device for carrying out a connection  
control for the home network and the outside network,  
and make a setting such that a packet destined to the  
global IP address will be transmitted to the  
15 communication relay device.

15. The communication relay device of claim 1, wherein  
the bridge processing unit also carries out at least  
one of a coding conversion, a protocol conversion and a  
20 bandwidth conversion for data entered from one of the  
outside network and the home network, and then  
transmits converted data to another one of the outside  
network and the home network.

25 16. A communication system, comprising:  
a home communication device on a home network;

an outside communication device on an outside network; and

a communication relay device for relaying information between the home network and the outside network, the communication relay device having:

a first copyright protection unit configured to carry out a first authentication and key exchange processing for purpose of copyright protection between the communication relay device and the home communication device on the home network;

a second copyright protection unit configured to carry out a second authentication and key exchange processing for purpose of copyright protection between the communication relay device and the outside communication device on the outside network, based on a scheme different from the first authentication and key exchange processing;

an identification information memory unit which stores an identification information of the outside communication device; and

a bridge processing unit configured to receive an access request for the home network from the outside communication device, and carry out transmission/reception of information between the home network and the outside network only when the outside communication device which made the access request is

stored in the identification information memory unit and then only when both the first authentication and key exchange processing by the first copyright protection unit and the second authentication and key 5 exchange processing by the second copyright protection unit succeed.

17. A computer program product for causing a computer to function as a communication relay device connected 10 to a home network, for relaying information between an outside communication device connected to an outside network and a home communication device connected to the home network, the computer program product comprising:

15 a first computer program code for causing the computer to carry out a first authentication and key exchange processing for purpose of copyright protection between the communication relay device and the home communication device on the home network;

20 a second computer program code for causing the computer to carry out a second authentication and key exchange processing for purpose of copyright protection between the communication relay device and the outside communication device on the outside network, based on a 25 scheme different from the first authentication and key exchange processing;

a third computer program code for causing the computer to store an identification information of the outside communication device; and

a fourth computer program code for causing the

5 computer to receive an access request for the home network from the outside communication device, and carry out transmission/reception of information between the home network and the outside network only when the outside communication device which made the access

10 request is stored in the identification information memory unit and then only when both the first authentication and key exchange processing by the first computer program code and the second authentication and key exchange processing by the second computer program

15 code succeed.

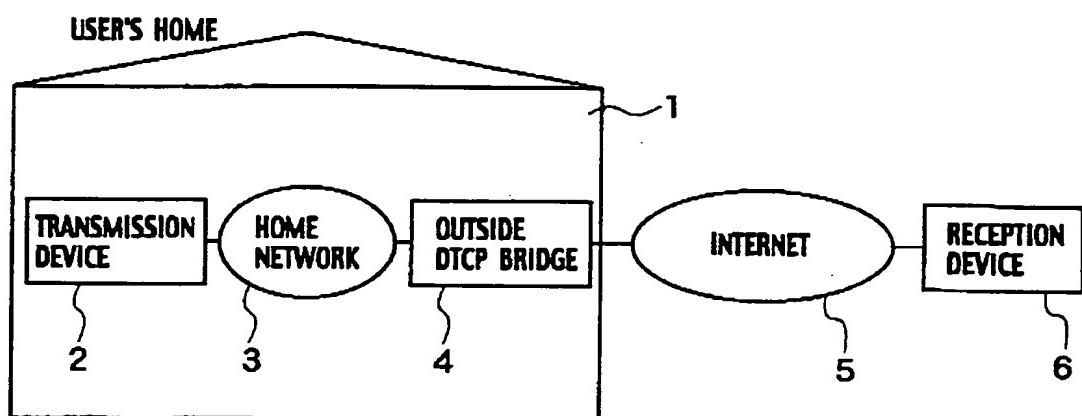
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## **ABSTRACT OF THE DISCLOSURE**

An outside DTCP bridge for relaying information between an outside communication device connected to an 5 outside network and a home communication device connected to a home network, carries out a first authentication and key exchange processing for purpose of copyright protection between the outside DTCP bridge and the home communication device as well as a second 10 authentication and key exchange processing for purpose of copyright protection between the outside DTCP bridge and the outside communication device, and stores an identification information of the outside communication device. Then, transmission/reception of information 15 between the home network and the outside network is carried out only when the outside communication device which made the access request is stored and both the first authentication and key exchange processing and the second authentication and key exchange processing 20 succeed.

FIG. 1



**FIG. 2**

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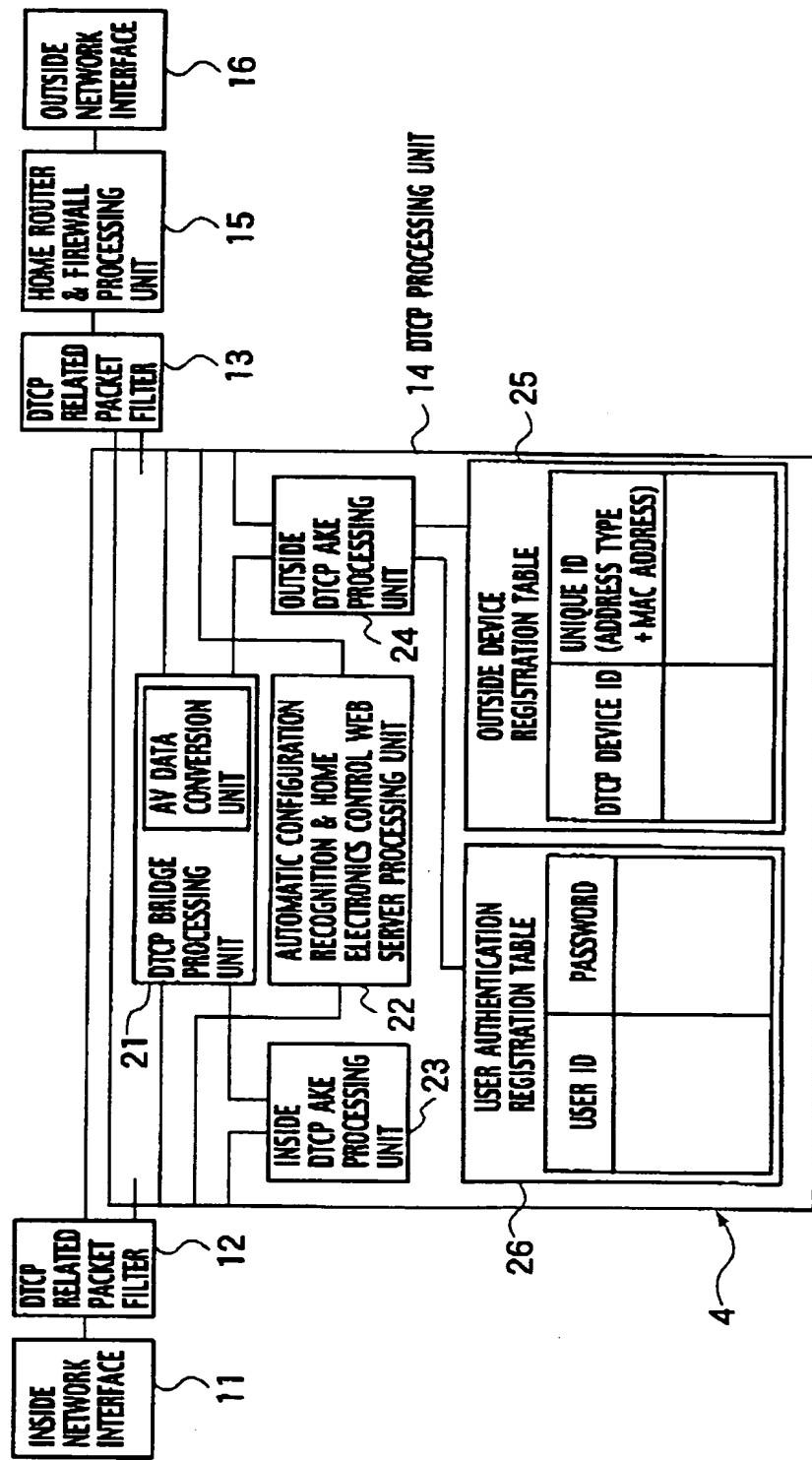
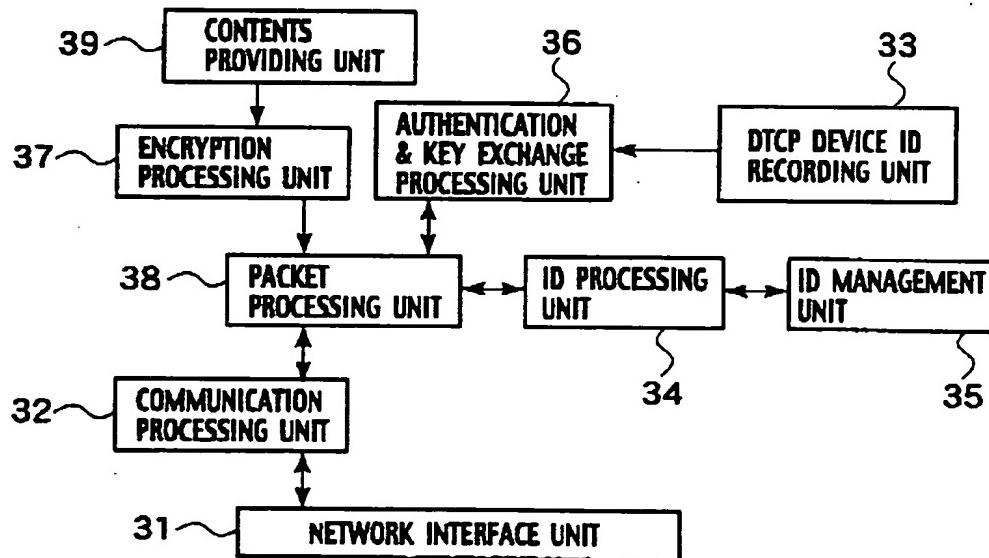


FIG. 3

REQUIRED ITEMS	OPTIONAL ITEMS		
RECEPTION DEVICE #1 DEVICE ID AA UNIQUE ID XX	ACCESS START TIME DATE/HOUR/MINUTE	REGISTRATION TIME DATE/HOUR/MINUTE	ACCESS STATE ACCESSING
RECEPTION DEVICE #2 DEVICE ID AA UNIQUE ID YY	DATE/HOUR/MINUTE	DATE/HOUR/MINUTE	---
RECEPTION DEVICE #3 DEVICE ID BB UNIQUE ID ZZ	DATE/HOUR/MINUTE	DATE/HOUR/MINUTE	ACCESSING
...	...		

FIG. 4



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FIG. 5

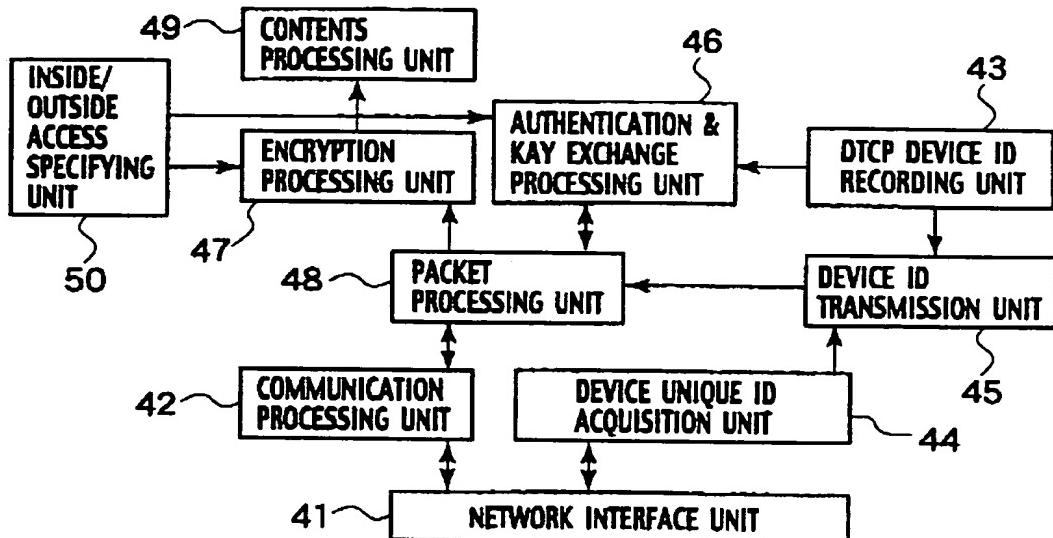


FIG. 6A

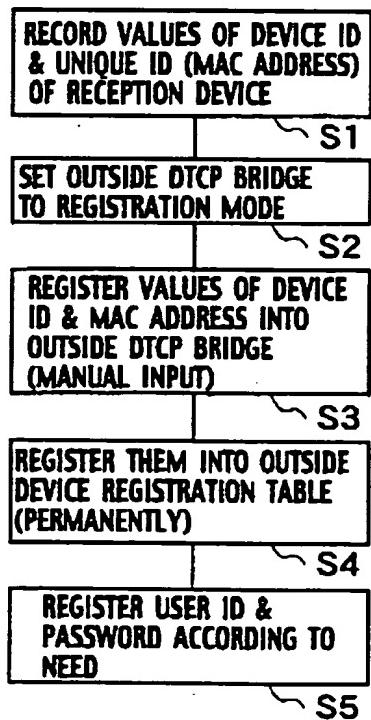


FIG. 6B

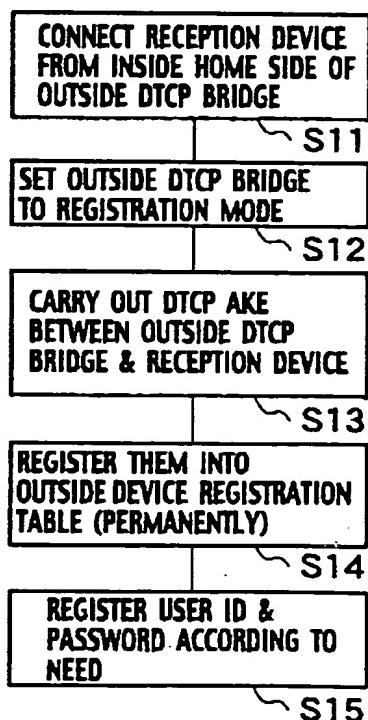


FIG. 6C

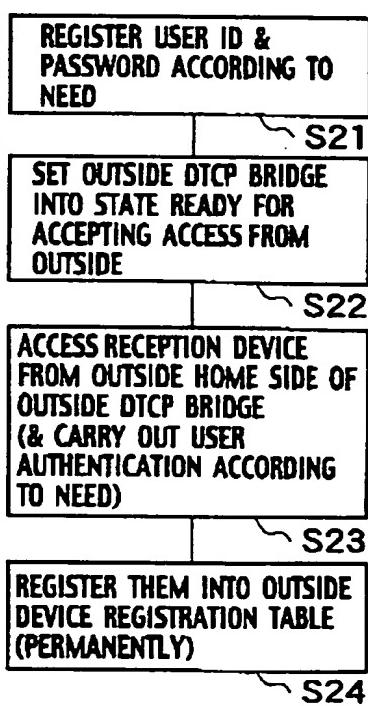


FIG. 7

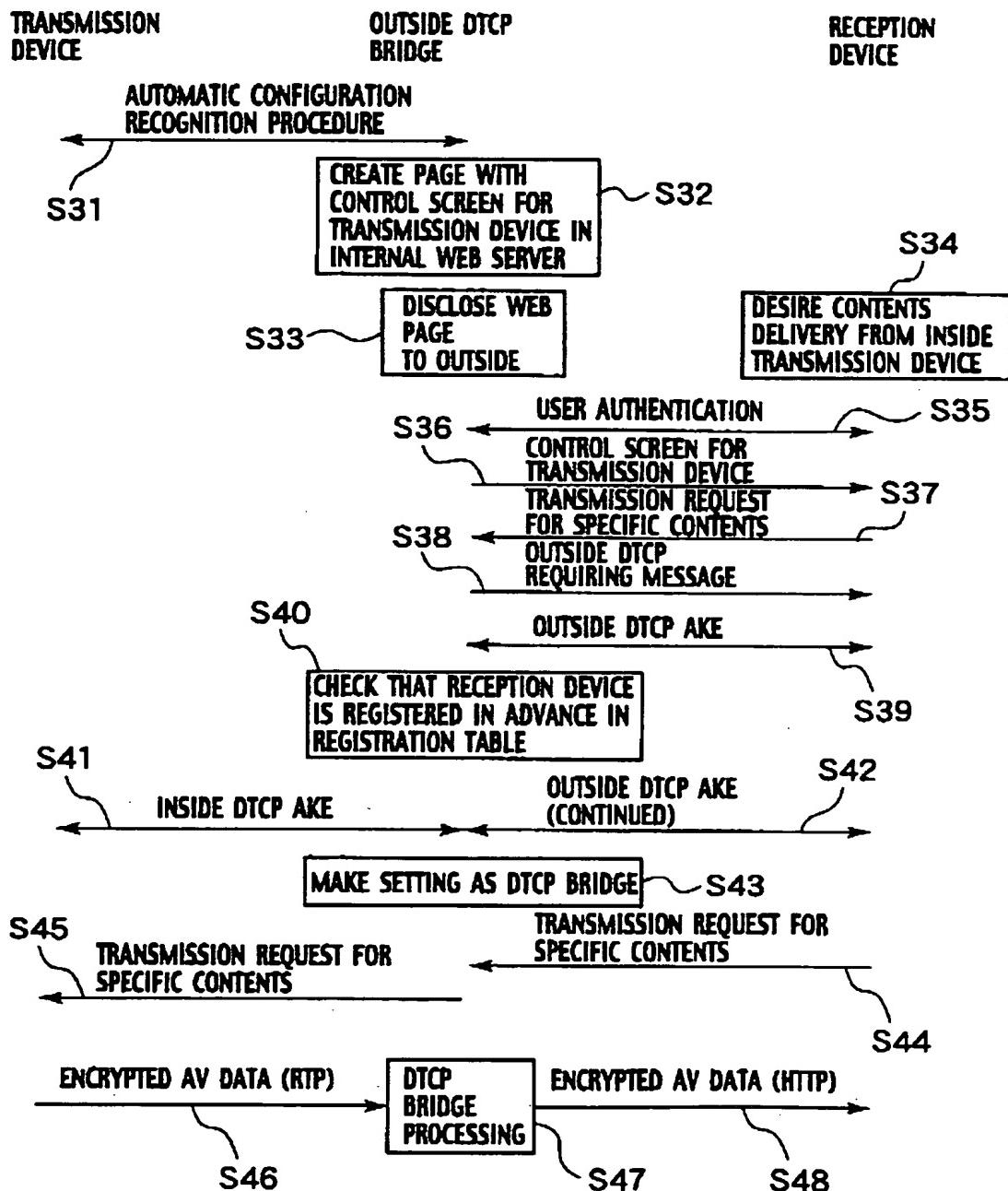
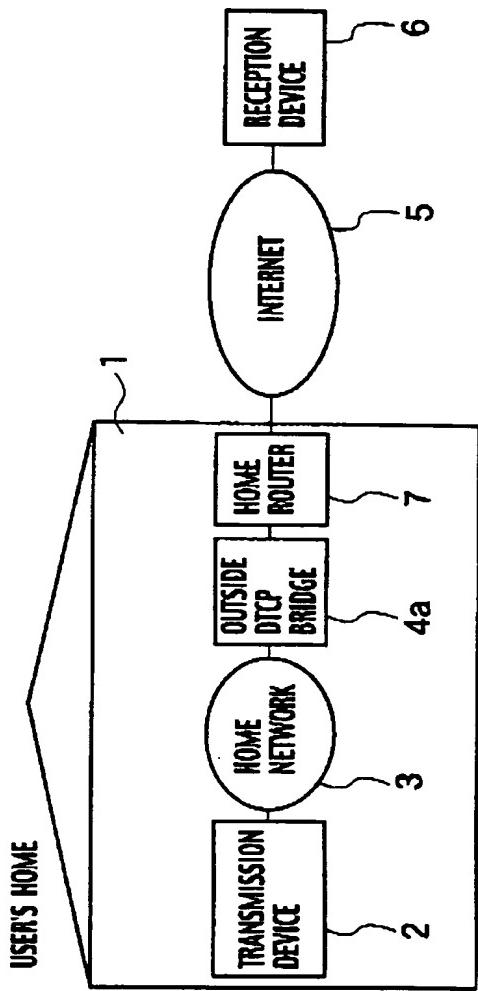
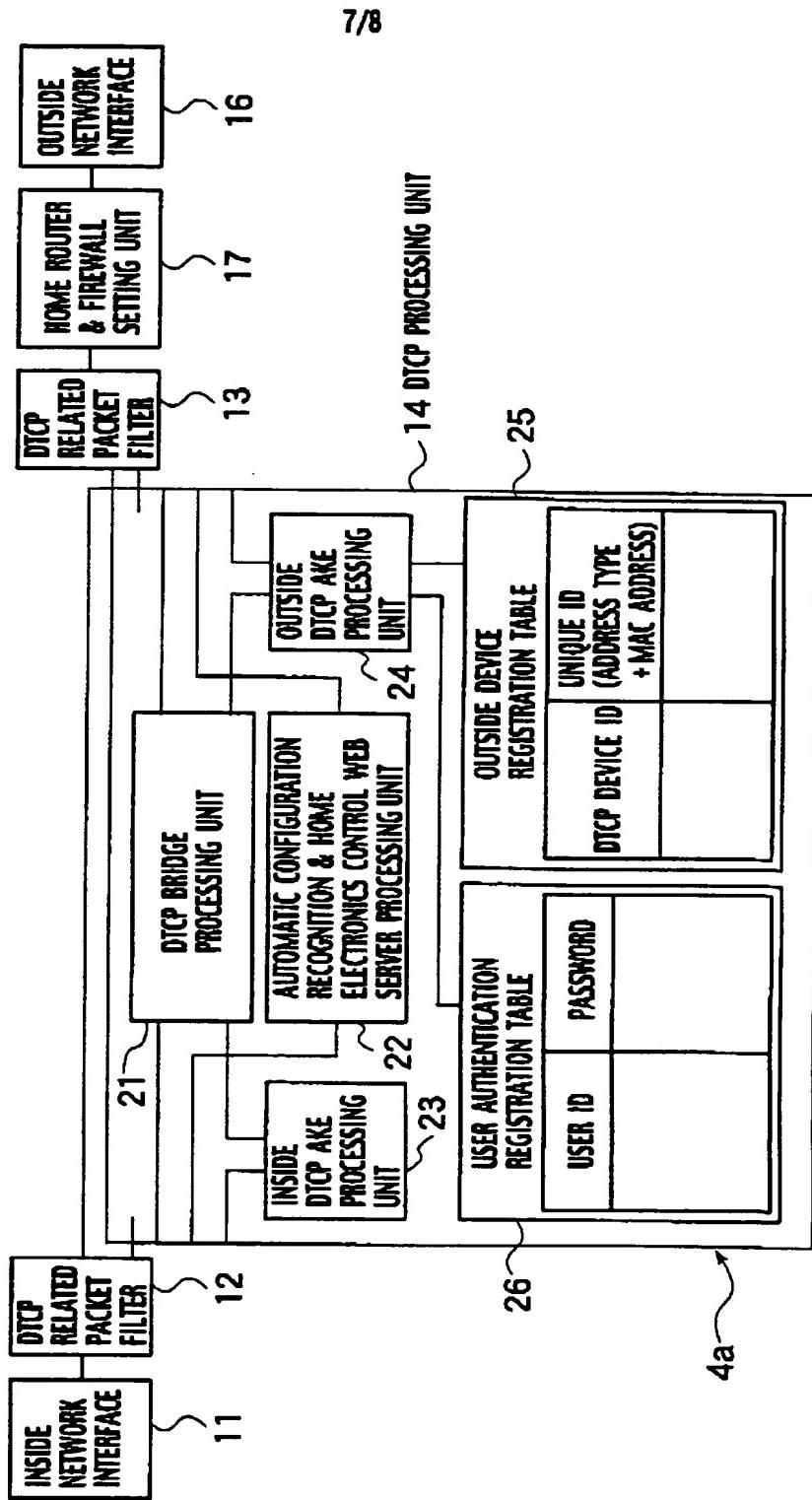


FIG. 8



**FIG. 9**



**FIG. 10**